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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/716,366

11/18/2003

Nathaniel R. Quick

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7590

10/01/2004

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EXAMINER

SMOOT, STEPHEN W

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,366

Applicant(s)

QUICK, NATHANIEL R.

Examiner

Stephen W. Smoot

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 7-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to application papers filed on 18 November 2003.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description:
26 in Fig. 1 (see page 8, lines 2-5).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

In the amendment to the specification (item 8 from applicant's filing request), change all appearances of "09/241,545" to --09/921,545-- in order to correct the application number corresponding to the parent application; and

In the amendment to the specification (item 8 from applicant's filing request) and in the cross-reference section on page 1, update to indicate that application serial number 09/088,044 has issued as US 6,271,576 and that application serial number 09/921,545 has issued as US 6,670,693.

Appropriate correction is required.

Claim Objections

3. Claims 1-3, 6-12 are objected to because of the following informalities:

In claim 1, line 7, change the second appearance of "via" to --conductive hole or via-- for proper antecedence;

In claim 2, line 1, change "elements" to --electronic elements-- for proper antecedence;

In claim 2, line 9, change "components" to --electrical components-- for proper antecedence;

In claim 2, line 13, change "conductive" to --electro-conductive-- for proper antecedence;

In claim 2, line 14, change "components" to --electrical components-- for proper antecedence;

Claim 3 is objected to because it depends on claim 2;

In claim 6, line 1, change "that are" to --are-- to correct grammar;

In claim 6, line 3, change "hexafluride" to --hexafluoride-- to correct spelling;

In claim 7, line 2, change "of essentially" to --essentially-- to correct grammar;

Claims 8-9 are objected to because they depend on claim 7;

In claim 10, line 2, change "of essentially" to --essentially-- to correct grammar;

In claim 10, line 5, delete "and" to correct grammar;

In claim 10, line 15, change "a third said" to --a third-- for proper antecedence;

In claim 10, line 15, change "sections" to --section-- to correct grammar;

In claim 10, line 17, change "and external" to --external-- to correct grammar;

Claim 10 is objected to because it does not end with a period (see MPEP section 608.01(m));

Claim 11 is objected to because it depends on claim 10;

In claim 12, line 4, delete "of" to correct grammar; and

In claim 12, line 6, change "hexafluride" to --hexafluoride-- to correct spelling.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-3, 10-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said first surface portion of said substrate" in line 9;

Claim 1 recites the limitation "said first surface portion of said substrate" in line 13;

Claim 1 recites the limitation "said semiconductive material on said first parallel surface" in line 15;

Claim 1 recites the limitation "said first surface portion of said substrate" in line 19;

Claim 1 recites the limitation "the reverse of said substrate" in lines 22-23; and

Claim 3 recites the limitation "said reverse side of said substrate" in line 2.

There is insufficient antecedent basis for these limitations in claims 1, 3.

In claim 1, line 17, the term "terminating a trace with an electrical tab formed thereon" does not particularly point out where the electrical tab is formed.

Regarding claim 2, the term "including diodes; thermo-resistive, piezoresistive and chemoresistive sensors; (p-n-p) or (n-p-n)-type transistors; and (p-n-p)-type channel transistors thereon" renders the claim indefinite because it is unclear whether this is exemplary claim language or if the applicant's intention is to further limit the claim. See MPEP § 2173.05(d).

In claim 10, lines 13-14, the term "to provide electrical connections to" does not particularly point out where the electrical connections are provided.

In claim 10, line 16, the term "said conductors" does not particularly point out if it is supposed to include the first conductor from line 12, the second conductor from line 13, and/or the conductor from line 16.

In claim 11, line 7, the term "said dielectric and conductor layers" does not particularly point out if the conductor layer is supposed to be the "second conductor layer" from line 4.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, because it depends on claim 10.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 4, 5, 6, 10, 11, 12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4, 6, 7, 1, 2, 3, respectively, of U.S. Patent No. 6,054,375. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims in '375 are directed to ceramic compounds, while the claims of the applicant's invention are directed to wide-bandgap semiconductor compounds. However, the group of ceramic materials as claimed in claims 3 and 6 of '375 can be aluminum nitride, silicon carbide, or boron nitride, which overlap with the group of wide-bandgap semiconductor compound materials claimed in claims 5 and 12 of the applicant's invention, thereby showing that a ceramic compound and a wide-bandgap semiconductor compound can, in some instances, be the same material. Accordingly, claims 4, 6, 7, 1, 2, 3 of '375 have all of the limitations respectively set forth in claims 4, 5, 6, 10, 11, 12 of the applicant's invention.

8. Claims 1-3 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 5,837,607. Although the conflicting claims are not identical, they are not patentably distinct from

each other because claims 1-3 of '607 are directed to ceramic compounds, while claims 1-3 of the applicant's invention are directed to wide-bandgap semiconductor compounds. As indicated above, materials like aluminum nitride, silicon carbide, and boron nitride are common to both ceramic compounds and wide-bandgap semiconductor compounds. Accordingly, claims 1-3 of '607 have all of the limitations respectively set forth in claims 1-3 of the applicant's invention.

Allowable Subject Matter

9. Claims 7-9 would be allowable if rewritten or amended to overcome the objection to claim 7 set forth in this Office action.

10. The following is a statement of reasons for the indication of allowable subject matter: Claims 7-9 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a method for making a diode device that includes the steps of forming a p-n junction by using laser synthesis to convert a first section of a wide-bandgap semiconductor compound substrate to p-type and an adjacent second section of the substrate to n-type.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Truher et al. teach the formation of doped beta silicon carbide by introducing dopant gases while laser irradiating co-deposited films of silicon and carbon.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00 am to 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sws

Stephen W. Smoot
Patent Examiner
Art Unit 2813